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AMSAT NEWS SERVICE
ANS-242

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

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ANS-242 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 242.01
 >From AMSAT HQ KENSINGTON, MD.
DATE August 30, 2015
To All RADIO AMATEURS
BID: $ANS-242.01

AMSAT-NA Board of Directors Ballots Due by 15 September

Ballots were mailed to AMSAT-NA members in good standing by 15 JULY 2015, and must be returned to the AMSAT-NA office by 15 SEP 2015 in order to be counted.
Those sent outside North America were sent by air mail. Your completed ballot should be returned as promptly as possible, and those from outside North America preferably by air mail or other expedited means.

This year there are eight candidates:

Barry Baines, WD4ASW
Jerry Buxton, N0JY
Steve Coy, K8UD
Drew Glasbrenner, KO4MA
Mark Hammond, N8MH
EMike McCardel, KC8YLD
Bob McGwier, N4HY
Bruce Paige, KK5DO

The four candidates receiving the highest number of votes will be seated as voting Board Members with two year terms. The two candidates receiving the next highest number of votes will be non-voting Alternate Board Members with
terms of one year. Please vote for no more than four candidates.

Please take the time to review the candidate statements that accompany the ballot and determine who you wish to see on the Board. Election of Board members is both an obligation as well as an opportunity by our membership to
help shape the future direction of AMSAT-NA.

[ANS thanks AMSAT-NA for the above information]

2015 AMSAT Symposium Dayton Hotel Reservation Correction

The 2015 AMSAT Space Symposium will be held Friday through Sunday, Oct 16, 17, 18, 2015 in Dayton, Ohio.

This year we will be at the Crowne Plaza Hotel, 33 East 5th Street, in downtown Dayton, a 3.5 star Hotel which has been recently renovated.

Here is the corrected and latest hotel reservation information provided by Crowne Plaza:

+ Reservations toll-free phone number: 1-800-689-5586
+ Group rate reservation code: "AMSAT"
+ Deadline for discounted reservations: September 17, 2015
by 3:00 PM US eastern time

The Symposium Committee announced that arrangements are made for a tour of the Air Force Museum at Wright-Patterson Air Force Base in Dayton for Monday, October 19. You may wish to extend your hotel reservation until Monday if you would like to participate on this tour.

You must call the 800 number for Crowne Plaza to make your hotel reservations. Registration for the Space Symposium and events can be done on-line via the AMSAT Store:
http://store.amsat.org/catalog/

The latest 2015 AMSAT Space Symposium information is posted on the web at:
http://www.amsat.org/?page_id=3667 -or- click on the "Events" tab at the top of the page at
http://www.amsat.org

[ANS thanks the 2015 AMSAT Symposium Posse for the above information]

AMSAT-NA Office Closed until September 9th

The AMSAT Office in Kensington, MD will be closed until Wednesday, September 9th. Enjoy the last of summer!

[ANS thanks Martha at AMSAT-NA for the above information]

New Distance Record Set on FO-29 by KG5CI and F4CQA

Dave, KG5CCI reported that at 1732UTC on August 27th, 2015, a QSO was made between himself, KG5CCI, and F4CQA on via the FO-29 satellite.

Dave explained, "This was not a scheduled contact, I simply answered Christophe's CQ call. I knew it was a good contact at the time, but as I was portable up on Arkansas' Shinnall Mountain, I did not have the resources available to calculate distances. After returning to my office I began to log the contacts I had made, and noticed the estimated distance between EM34 and JN17 was in excess of 7500km. About the same time I came to this realization, my email chirped with a message from Christophe, who had came to the same conclusion."

After some quick exchanges, and verifying 10 digit locators, Dave and Christophe have
settled on an official distance of 7599.959km between Dave's grid of EM34ST11TL and Christophe's grid of JN17EA22OT. The http://no.nonsense.ee/qth/map.html website was used for distance calculations.

Dave concluded, "To the best of our knowledge, referencing data found on Amsat-UK's website
(at http://amsat-uk.org/2015/05/06/uk-texas-extreme-dx-contact/) this breaks the previous distance records of 7537.799km between W5CBF and G4DOL, and the 7538.685km contact between K4FEG and DK1TB.

Dave had a camera setup to record the pass as well, and you can view a raw clip of the contact here:

https://youtu.be/orY0Re0IY30

If anyone has any questions about the contact, Dave will be happy to answer them. Special thanks and a solid *GOOD-DX* to Christophe for the contact.

[ANS thanks Dave, KG5CCI for the above information]

Bring the Space Station Into Your Classroom With NASA's STEM on Station Website

NASA is celebrating NASA astronaut Scott Kelly, Russian cosmonaut Mikhail Kornienko and their yearlong mission to the International Space Station with the launch of the new STEM on Station website!

The website features lesson plans, videos and up-to-the-minute education news. Follow along with Scott and Mikhail to find out what we hope to learn from their extended mission. Get to know the International Space Station, and learn how work there benefits life on Earth as well as prepares us for our future journey to Mars.

The STEM on Station website also features Learning Launchers. These "Teacher Toolkits" focus on research and activities related to the space station. Each month, a new Learning Launcher will feature One-Year Mission research or another topic related to the space station. Use lesson plans, videos and related resources to bring the International Space Station into your classroom. Since more topics will be featured, check back often to see what's coming next.

We are working "Off the Earth, For the Earth . and in the Classroom"!

To check out the new website, visit
http://www.nasa.gov/education/STEMstation.

[ANS thanks the NASA Education Express Message -- Aug. 27, 2015]

IARU Reiterates Commitment to Coordinate Satellites Only Within International
Band Plans

In apparent reference to efforts by China's Amateur Satellite Group (CAMSAT) to coordinate operating frequencies for nine satellites set to launch in early September, the International Amateur Radio Union (IARU) has made it clear that it will not coordinate frequencies that do not conform with accepted band plans for all three IARU regions. The IARU has informed CAMSAT CEO Alan Kung, BA1DU, that it was only able to coordinate uplink and downlink frequencies for two of the nine spacecraft (CAS-3/XW-2D and E), but it has not made that letter public. CAMSAT has said it plans to launch the nine satellites, all carrying Amateur Radio payloads, on September 7 or 8.

"The IARU Satellite Adviser, Hans van de Groenendaal, ZS6AKV, and his advisory panel are mandated to coordinate frequencies within the IARU band plans for amateur satellites," said a public statement released on August 20 by IARU Secretary Rod Stafford, W6ROD. "Coordinated frequencies must comply with band plans that are common to all three IARU regions. Satellites coordinated outside these plans could cause interference to terrestrial amateur operations in other regions."

The IARU statement suggested that the popularity and high occupancy of 2 meters "led to a request by satellite builders for coordination outside the spectrum reserved for satellites in the IARU band plans (145.800-146.000 MHz), as not enough channels are available to satisfy their requirements."

The IARU said that, in theory, satellites could be programmed only to operate while orbiting above their countries of origin, but "because satellite orbits make it difficult to pinpoint operations, spillover to other regions may occur during parts of the orbit. Accordingly, IARU will not coordinate frequencies for satellites which are planned to operate outside the internationally aligned IARU band plans for amateur satellites."

The IARU statement noted that its frequency coordination service aims to "maximize spectrum utilization and avoid possible interference to other satellites and ground stations." The IARU recommended that satellite groups "work on a sharing plan or use other parts of the Amateur Service spectrum designated for satellite operation," and it suggested resurrecting 10 meters - once popular as a satellite band, but largely unused today - as one possibility for uplink channels.

"The band segment 29,300-29,510 MHz has been used for Amateur-Satellite downlinks for more than 40 years, beginning with Australis-OSCAR 5 in 1970 and AMSAT-OSCAR 6, AMSAT's first communication satellite, in 1972," the IARU statement noted. Just one amateur satellite actively uses a 29 MHz downlink - AMSAT-OSCAR 7, launched in 1974. Conceding that 29 MHz downlink frequencies "would not be practical for today's very small satellites" due to antenna size considerations, the IARU said the band could be used for uplinks, even with small receiving antennas, because Earth stations can run sufficient transmit power to overcome the disadvantage. "The IARU Satellite Adviser and his panel believe that the 10 meter band offers a good alternative to 2 meter uplinks," the IARU said.

AMSAT President Barry Baines, WD4ASW, said his organization's Advanced Satellite Communications and Exploration of New Technology (ASCENT) initiative is exploring alternatives to address the proliferation of CubeSats and the resulting pressure on 2 meters and 70 centimeters. He pointed out that the 200 kHz IARU allocation on 2 meters "is not very wide" given the number of satellites being launched, but the use of 10 meters is impractical in this era of CubeSats.

"It is incumbent upon the Amateur-Satellite community to develop new ways of 'keeping Amateur Radio in space' that take advantage of other bands and provide enhanced services through appropriate technologies, given the need to find suitable bandwidth for an increasing number of satellites," Baines told ARRL. He said using digital technology could provide multi-channel capability, and design work is already under way. Transitioning to "underutilized amateur spectrum on bands such as 5 GHz and 10 GHz is also a possibility, Baines added, although he was quick to point out that AMSAT does not intend to abandon use of 2 meters and 70 centimeters for its own satellite projects.

The IARU said that when a large group of satellite sharing the same band is launched, "they will soon drift apart which enhances the opportunity to share the same frequencies. For example, during the initial phase, just after launch, a time-sharing system could be used to monitor the payloads before initializing transponders and other systems."

"Currently the IARU team also coordinates frequencies for satellites built by universities and educational groups in an effort to maximize spectrum utilization and mitigate any possible interference to Amateur Radio operations," the IARU statement concluded. "The IARU is committed to work with these groups and with the ITU to find

other spectrum for these satellites."

[ANS thanks the ARRL for the above information]

CPUT planning successor to Africa’s first nanosatellite

Following on the successes of ZACube-1, a.k.a. TshepisoSat, ZACube-2 is the second instalment in the Cape Peninsula University of Technology (CPUT) F’SATI
mission series.

The satellite will serve as technology demonstrator for essential subsystems and form the basis on which an innovative Software Defined Radio (SDR) platform
will be developed as primary payload. The SDR is highly flexible to address a
wide range of communication needs and will be a test bed to validate vessel detection. Additionally, the satellite will feature a medium resolution imager
as secondary payload to demonstrate the feasibility of future remote sensing applications such as ocean colour monitoring and large fire tracking.

This paper details the conceptual design and highlights the choices made around the proposed development

http://www.amsatsa.org.za/ZACube-2%20%20The%20successor%20to%20Africa%E2%80%99s%20first%20nanosatellite.pdf

Read the recent article by Hans van de Groenendaal ZS6AKV in EngineerIT magazine at
http://www.ee.co.za/article/cput-planning-successor-africas-first-nanosatellite.html

Southern African Amateur Radio Satellite Association (SA AMSAT)
http://www.amsatsa.org.za/

[ANS thanks AMSAT-UK for the above information]

ASU Chosen to Lead Lunar CubeSat Mission

A spacecraft the size of a shoebox with Arizona origins will soon be orbiting
our nearest neighbor to create a map of water-ice on the moon.

The NASA-selected CubeSat will be designed, built and operated at Arizona State University and is one piece of the agency's larger mission to fully characterize the water content at the lunar South Pole in preparation for exploration, resource utilization and improved understanding of the moon's geologic history.

The spacecraft, called the Lunar Polar Hydrogen Mapper, or "LunaH-Map" for short, will produce the most detailed map to date of the moon's water

deposits,
unveiling new details about the depth and distribution of the ice that
has been
tentatively identified from previous missions. Confirming and mapping those
deposits in detail will help NASA understand how much water might be
available
and will help inform NASA's strategy for sending humans farther into the
solar
system.

The ability to search for useful assets, such as hydrogen, can potentially
enable astronauts to manufacture fuel and other provisions needed to
sustain a
crew for a journey to Mars, reducing the amount of fuel and weight that NASA
would need to transport from Earth.

This is the third major space project for which NASA has selected ASU in the
past year, and it is the first planetary science spacecraft mission that
will
be led by ASU. It represents a major achievement for planetary geologist
Craig
Hardgrove, the School of Earth and Space Exploration postdoctoral research
associate who proposed the mission and will be overseeing it as principal
investigator.

"All of our previous NASA mission involvement has consisted of us having
instruments on other people's missions. This is ASU's first interplanetary
mission - this is our mission, our chance to trail blaze," said Jim Bell,
professor in ASU's School of Earth and Space Exploration and mission deputy
principal investigator.

"It's a privilege to be leading this fantastic team, and I want to make sure
we do it right and deliver on our promise to NASA," Hardgrove said.

CubeSats are part of a growing movement that is revolutionizing space
exploration because of their small size and low cost of construction and
operation, effectively opening the door to early-career scientists,
providing
them an opportunity to operate missions of their own.

"How much good science can we do with these small missions? We don't
know the
answer, but we will be one of the first groups to try to answer the
question,"
Bell said.
Although this is one of NASA's first forays into deep-space science
experiments with CubeSats, the technology isn't new to NASA and
universities,
which have recognized their value and have been building them for years.

"CubeSats are a model for a new way to gain access to space, but they
are also
a model for how to teach students how to design, build, operate and
troubleshoot a real space mission," said Bell, who also directs ASU's
NewSpace
Initiative. "Students want to know how a spacecraft works, but not just
from a
PowerPoint presentation. This is their opportunity to build something. Break
it. Fix it. Test it again. Launch it. Operate it. And that is the beauty of
CubeSats; they provide students with the experience of going through the
complete mission process."

LunaH-Map will be designed, built and tested on ASU's Tempe campus, in
partnership with NASA's Jet Propulsion Laboratory and several other partners

supplying space-qualified hardware and services. LunaH-Map leverages technology
from at least six small commercial space companies with expert knowledge and experience in building spacecraft hardware: Radiation Monitoring Devices, Busek, KinetX, NASA's Ames Research Center, Catholic University of America, and
Planetary Resources.

Overseeing all aspects of the spacecraft engineering is the mission's chief engineer and co-investigator, Jekan Thanga, an assistant professor in ASU's School of Earth and Space Exploration. Much of the design and development of LunaH-Map will be done in his Space and Terrestrial Robotic Exploration (SpaceTREx) Laboratory and clean rooms in ASU's state-of-the-art Interdisciplinary Science and Technology Building 4, which with their glass windows offer an opportunity for visitors to watch the spacecraft being built,
tested and operated.

In total, there will be 15 to 20 ASU professionals, including students, working on all aspects of the design, development, testing and delivery of the
spacecraft.

"Within the United States there only about seven institutions that are doing interplanetary CubeSat missions," Thanga said. "ASU brings together scientists
and engineers to work on radical new concepts together, from the start. This innovative collaboration strategy leads to greater science return, and more creativity and capability."

Other co-investigators from ASU include Professor Mark Robinson and Associate
Research Professor Paul Scowen from the School of Earth and Space Exploration.

LunaH-Map, along with a number of other deep-space CubeSats, is a candidate to
fly to lunar orbit on Exploration Mission-1, the first flight of NASA's Space
Launch System (SLS), which will be the most powerful rocket ever built and will
enable astronauts in the Orion spacecraft to travel deeper into the solar system. NASA will provide several CubeSat missions spots on the maiden SLS mission.

LunaH-Map is a 6U ("6 unit") CubeSat. One "unit" is a cube measuring 4.7 inches on a side; LunaH-Map strings six of these CubeSat building blocks together and weighs as much as a small child (about 30 pounds).
But just because it is small, doesn't mean it is less sophisticated - in this
case, as with our smartphones, size doesn't compromise capabilities. LunaH-Map's design allows for all the necessary sensors and instruments to be securely packaged inside. A jack-in-the-box-like deployer releases the spacecraft and panels pop out like little wings.

Once it arrives at the moon, the tiny spacecraft will embark on a 60-day science mission, consisting of 141 science orbits, using a suite of science instruments.

Its main instrument is a neutron detector designed to sense the presence of hydrogen by measuring the energies of neutrons that have interacted with and subsequently leaked back out of the material in the top meter of the lunar surface.

"We know from previous missions there is an increased abundance of hydrogen at the lunar poles. But we don't know how much or exactly where," Hardgrove said.
"NASA has funded three different CubeSats to learn more: Lunar IceCube, Lunar FLASHLIGHT and LunaH-Map. They all look for water in different ways and provide different types of information."

As LunaH-Map flies over the lunar South Pole at a very low altitude, it counts the energies of neutrons that have leaked out of the lunar surface. The energy distribution of the neutrons that hit the detectors tells us about the amount of hydrogen that's buried in the top meter of lunar soil.

LunaH-Map will map the hydrogen content of the entire South Pole of the moon, including within permanently shadowed regions at high resolution. LunaH-Map will measure the bulk hydrogen content, up to a meter beneath the lunar surface, while the instruments on both Lunar IceCube and FLASHLIGHT will tell us about the very top few microns. LunaH-Map will create the highest-resolution maps of regional near-surface (top-meter) water-ice distribution across the entire South Pole of the moon.

"Science is a human endeavor, and part of that is knowing each other and trusting each other. And when it comes to a NASA mission and taxpayer dollars to do exploration, you got to have the credentials. You have to be trusted, you need to have proven yourself, you need to show that you can make it happen and you won't fail. And we've got a history now where that's the case," said Linda Elkins-Tanton, director of ASU's School of Earth and Space Exploration.

http://www.moondaily.com/reports/ASU_chosen_to_lead_lunar_CubeSat_mission_999.html

[ANS thanks SpaceDaily.com for the above information]

AMSAT Events

Information about AMSAT activities at other important events around the country. Examples of these events are radio club meetings where AMSAT Area Coordinators give presentations, demonstrations of working amateur satellites, and hamfests with an AMSAT presence (a table with AMSAT literature and merchandise, sometimes also with presentations, forums, and/or demonstrations).

*Saturday and Sunday, 5-6 September - ARRL Roanoke Division Convention Shelby, NC Hamfest, AMSAT Forum scheduled for Saturday

*Friday, Saturday, and Sunday, October 16-18 2015, AMSAT Symposium in

Dayton OH (Dayton Crown Plaza)

*Saturday, 7 November 2015 – Oro Valley Amateur Radio Club Hamfest in Marana AZ

*Saturday and Sunday, 7-8 November 2015 – Stone Mountain Hamfest and ARRL Georgia Section Convention in Lawrenceville GA

*Saturday, 5 December 2015 – Superstition Superfest 2015 in Mesa AZ

[ANS thanks AMSAT-NA for the above information]

ARISS News

Successful Contacts

The direct ARISS contact with Kantonschule am Burggraben, Switzerland on August 24, 12:24 UTC, via HB9SG was successful.

Contact was established at 12:24 UTC, only 50 seconds later than expected. 18 questions were answered.

The downlink signal was loud and clear. Only during the first 4 questions there was a bit QRM due to the antenna location in the middle of the city.

The audience was about 300 persons in the contact room and about 1000 students
and 230 others via the live-stream on the Internet.

TV stations, 3 radio stations "Radio SRF3" and nationwide newspapers covered the event.

TV links:
http://www.tvo-online.ch/?playlist=news (TV-Ostschweiz) „Erde an ISS“
http://www.teletop.ch/programm/heute-auf-tele-top/art/heute-auf-tele-top-001691193/ (Tele Top)
(look at minute 16.07)

Radio links:
http://www.srf.ch/wissen/technik/aus-der-aula-ins-all-eine-kanti-in-st-gallen-funkt-mit-der-iss (SRF3 - Nationales Radio)

Pictures can be found on
http://cloud.syso.ch/photo/#!Albums .

Maconaquah School Corporation, Bunker Hill, IN, direct via WD9GIU
The ISS callsign was NA1SS
The astronaut was Kimiya Yui KG5BPH
Maconaquah had a very successful contact. All 20 questions were asked and there was one extra. They might have been able to have a few more but they signed off about 1 minute before LOS. It was an outstanding contact.

Upcoming ARISS Contacts

Sochi, Russia, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled cosmonaut is Mikhail Kornienko RN3BF

Contact is a go for 2015-08-29 11:15 UTC

Ulvila Upper Secondary School, Finland, direct via OH1F
The ISS callsign is presently scheduled to be OR4ISS
The scheduled astronaut is Kjell Lindgren KO5MOS
Contact is a go for: Tue 2015-09-01 11:44:03 UTC

Kazakhstan, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled astronaut is Aidyn Aimbetov
Contact is a go for 2015-09-08 07:10 UTC

Watch
http://www.ariss.org/upcoming-contacts.html
for information about upcoming contacts as they are scheduled.

[ANS thanks ARISS, and Charlie, AJ9N for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
Joe Spier, K6WAO
k6wao at amsat dot org

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k6wao
Joe Spier
k6wao(a)amsat.net